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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,185	11/29/2001	Albert Rabinovich	EH-10417	1030
30188	7590	03/03/2004	EXAMINER	
PRATT & WHITNEY 400 MAIN STREET MAIL STOP: 132-13 EAST HARTFORD, CT 06108			YEE, DEBORAH	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 03/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/683,185	Applicant(s) RABINOVICH ET AL.	
	Examiner Deborah Yee	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 3, 5 to 10, and 12 to 36 is/are pending in the application.
- 4a) Of the above claim(s) 34 to 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 to 3, 5 to 10 and 12 to 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11-10-03</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

Election/Restrictions

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 10, 2003 has been entered.

Election/Restrictions

Newly submitted claims 34 to 36 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 34 to 36 are directed to a method of quenching a nickel alloy by impingement cooling and reducing said cooling at the exit temperature range of a ductility trough whereas the present invention is directed to an apparatus and process of cooling a material having a first section and a second section by impingement cooling said first section with a fluid to increase a cooling rate of said first section relative to a cooling rate of said second section.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 34 to 36 are withdrawn from

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consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 3, 5 to 10, and 12 to 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunge (US Patent 6,394,793).

Bunge on lines 8 to 67 of column 3 and lines 1 to 20 of column 4 discloses a method and apparatus for cooling heat-treated metallic work pieces by using a set of concentric air quench delivery tubes, for directing a compressed air quench onto specified areas of the work piece for cooling, which closely meets claims 1 to 3, 5 to 10 and 12 to 33. Note that the prior art discloses a first set of tubes located above the work piece (first section) and a second set of tubes located below the work pieces (second section). The air quench tubes are placed in close proximity to the relatively thicker and more massive portion (first section) thereby increasing the cooling rate relative to the cooling rate of the thinner and less massive portions (second section).

Moreover, in regard to claims 8 to 10 and 12 to 14, the first cooling rate is supplemented with additional cooling by increasing the number of tubes or modifying

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the air pressure rate and positioning of cooling tubes so that the differential between the first cooling and second cooling rate is minimized, see lines 28 to 38, column 9.

Also Bunge on lines 20 to 49, column 3, discloses an apparatus for quenching a material, the material having a first section and second section, wherein the apparatus comprises a support for receiving the material, and an outlet adjacent said support for impinging a cooling gas against the first section of the material, so that a cooling rate of the first section increases relative to a cooling rate of the second section . Moreover, Bunge discloses on lines 1 to 30, column 6, that distancing, shape, and positioning, and quantity of cooling tubes are critical to control cooling rate. Although Bunge does not disclose the actual numerical diameter and circumference size of the outlets or the spacing and number of outlets as recited by claims 16 to 19, such would not be a patentable difference since it would be a matter of routine optimization well within the skill of the artisan and productive of no new and unexpected results to determine tubular parameters for desired cooling rate.

Furthermore it is the examiner's position that Bunge discloses impingement cooling because he uses a compression gas (equivalent to force convection) at different pressures wherein higher pressure produces a higher cooling rate (equivalent to higher heat transfer coefficient).

Also even though prior art does not teach a heat transfer coefficients up to approximately 300 BTU/hrft²F as recited by claims 23, 26, 29 and 33, such would expected since similar cooling means are used . Note that applicant's on pages 7 and 8, paragraph 48 discloses cooling with compressed air at a pressure of 45 and 75psig.

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Similarly, Bunge on lines 20 to 25 in column 8 disclose cooling with compressed air up to 100psig. Moreover, the air pressure value would be a matter of routine optimization well within the skill of the artisan depending upon the demands and desires sought for the quenching process.

In regard to claims 24, 25 27, 28, Bunge on lines 5 to 19 in column 1 discloses cooling parts having complex shapes with different volumes and surfaces, and thus teaches cooling larger volumes at a faster cooling rate than the lower volume sections in order to have uniform cooling.

Moreover similar to claims 31 to 33, Bunge in figures 4 and 5 show that his process produces a greater heat transfer coefficient greater than those created by oil bath quenching.

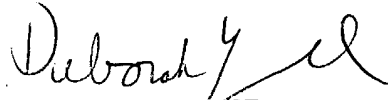
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on Monday-Friday from 6:00 to 2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*dy


DEBORAH YEE
PRIMARY EXAMINER